

16569 U.S. PTO  
111803

PTO/SB/05 (08-03)

Approved for use through 07/31/2006. OMB 0651-0032

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<b>UTILITY PATENT APPLICATION TRANSMITTAL</b>  (Only for new nonprovisional applications under 37 CFR 1.53(b))	Attorney Docket No.	HO-P02894US0
	First Inventor	Per Andersson
	Title	MICROFLUIDIC DEVICE
	Express Mail Label No.	ER 509322134US

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10715897

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<b>APPLICATION ELEMENTS</b> See MPEP chapter 600 concerning utility patent application contents.	ADDRESS TO: MS Patent Application Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
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1. <input checked="" type="checkbox"/> Fee Transmittal Form (e.g., PTO/SB/17) (Submit an original, and a duplicate for fee processing) 2. <input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. 3. <input checked="" type="checkbox"/> Specification [Total Pages <b>43</b> ] (preferred arrangement set forth below) - Descriptive title of the invention - Cross Reference to Related Applications - Statement Regarding Fed sponsored R & D - Reference to sequence listing, a table, or a computer program listing appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure 4. <input checked="" type="checkbox"/> Drawing(s) (35 U.S.C. 113) [Total Sheets <b>13</b> ] 5. Oath or Declaration [Total Sheets <b>1</b> ] a. <input checked="" type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) i. <input type="checkbox"/> <b>DELETION OF INVENTOR(S)</b> Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b). 6. <input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76	7. <input type="checkbox"/> CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix) 8. <input type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. <input type="checkbox"/> Computer Readable Form (CRF) b. Specification Sequence Listing on: i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or ii. <input type="checkbox"/> Paper c. <input type="checkbox"/> Statements verifying identity of above copies <b>ACCOMPANYING APPLICATION PARTS</b> 9. <input type="checkbox"/> Assignment Papers (cover sheet & document(s)) 10. <input type="checkbox"/> 37 CFR 3.73(b) Statement <input type="checkbox"/> Power of (when there is an assignee) Attorney 11. <input type="checkbox"/> English Translation Document (if applicable) 12. <input checked="" type="checkbox"/> Information Disclosure <input checked="" type="checkbox"/> Copies of IDS Statement (IDS)/PTO-1449 Citations (36) 13. <input type="checkbox"/> Preliminary Amendment 14. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. <input type="checkbox"/> Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent. 17. <input type="checkbox"/> Other: Check in the amount of \$385.00
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18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

☐ Continuation ☐ Divisional ☒ Continuation-in-part (CIP) of prior application No.: 10/621,868 and 09/674,457

Prior application information: Examiner Not Yet Assigned Art Unit: N/A

**For CONTINUATION OR DIVISIONAL APPS only:** The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

<b>19. CORRESPONDENCE ADDRESS</b>					
<input checked="" type="checkbox"/> Customer Number:	<b>26271</b>		OR	<input type="checkbox"/> Correspondence address below	
Name					
Address					
City	State	Zip Code			
Country	Telephone	Fax			

Name (Print/Type)	David L. Fox	Registration No. (Attorney/Agent)	40,612
Signature		Date	November 18, 2003

<b>Utility Patent Application Transmittal</b> I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. ER 509322134US, in an envelope addressed to: MS Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below. Dated: November 18, 2003 Signature: <u>Staci Harris</u> (Staci Harris)	
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# FEE TRANSMITTAL for FY 2004

Effective 10/01/2003, Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

**TOTAL AMOUNT OF PAYMENT** (\$) 385.00

## Complete if Known

Application Number	Not Yet Assigned
Filing Date	November 18, 2003
First Named Inventor	Per Andersson
Examiner Name	Not Yet Assigned
Art Unit	N/A
Attorney Docket No.	HO-P02894US0

## METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number

06-2375

Deposit Account Name

Fulbright & Jaworski L.L.P.

The Director is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
1001	2001	770	385	Utility filing fee	385.00
1002	2002	340	170	Design filing fee	
1003	2003	530	265	Plant filing fee	
1004	2004	770	385	Reissue filing fee	
1005	2005	160	80	Provisional filing fee	
<b>SUBTOTAL (1)</b> (\$)					385.00

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Extra Claims	Fee from below	Fee Paid
12	-20** =		0.00
1	-3** =		0.00
Multiple Dependent			

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
1202	2202	18	9	Claims in excess of 20	
1201	2201	86	43	Independent claims in excess of 3	
1203	2203	290	145	Multiple dependent claim, if not paid	
1204	2204	86	43	** Reissue independent claims over original patent	
1205	2205	18	9	** Reissue claims in excess of 20 and over original patent	
<b>SUBTOTAL (2)</b> (\$)					0.00

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	2051	130	65	Surcharge - late filing fee or oath	
1052	2052	50	25	Surcharge - late provisional filing fee or cover sheet.	
1053	1053	130	130	Non-English specification	
1812	1812	2,520	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	1804	920*	920*	Requesting publication of SIR prior to Examiner action	
1805	1805	1,840*	1,840*	Requesting publication of SIR after Examiner action	
1251	2251	110	55	Extension for reply within first month	
1252	2252	420	210	Extension for reply within second month	
1253	2253	950	475	Extension for reply within third month	
1254	2254	1,480	740	Extension for reply within fourth month	
1255	2255	2,010	1,005	Extension for reply within fifth month	
1401	2401	330	165	Notice of Appeal	
1402	2402	330	165	Filing a brief in support of an appeal	
1403	2403	290	145	Request for oral hearing	
1451	1451	1,510	1,510	Petition to institute a public use proceeding	
1452	2452	110	55	Petition to revive - unavoidable	
1453	2453	1,330	665	Petition to revive - unintentional	
1501	2501	1,330	665	Utility issue fee (or reissue)	
1502	2502	480	240	Design issue fee	
1503	2503	640	320	Plant issue fee	
1460	1460	130	130	Petitions to the Commissioner	
1807	1807	50	50	Processing fee under 37 CFR 1.17(q)	
1806	1806	180	180	Submission of Information Disclosure Stmt	
8021	8021	40	40	Recording each patent assignment per property (times number of properties)	
1809	2809	770	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	2810	770	385	For each additional invention to be examined (37CFR 1.129(b))	
1801	2801	770	385	Request for Continued Examination (RCE)	
1802	1802	900	900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3)** (\$) 0.00

## SUBMITTED BY

Name (Print/Type) David L. Fox

Signature

Registration No. (Attorney/Agent)

40,612

(Complete (if applicable))

Telephone (713) 651-8231

Date

November 18, 2003

## Fee Transmittal

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Dated: November 18, 2003

Signature:

Staci Harris

(Staci Harris)

Application No. (if known):

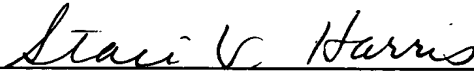
Attorney Docket No.: HO-P02894US0

## Certificate of Express Mailing Under 37 CFR 1.10

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Alexandria, VA 22313-1450

on November 18, 2003  
Date



Signature

Staci Harris

Typed or printed name of person signing Certificate

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

Application Data Sheet

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Dated: November 18, 2003

Signature: 

(Staci Harris)

Docket No.: HO-P02894US0  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Per Andersson, et al.

Application No.: TBA

Group Art Unit: N/A

Filed: Herewith

Examiner: N/A

For: MICROFLUIDIC DEVICE

**REQUEST FOR DECLARATION OF INTERFERENCE**

**MS Patent Application  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**

Dear Sir:

**REMARKS AND REQUEST FOR DECLARATION OF INTERFERENCE**

This Request For Declaration Of Interference accompanies a continuation-in-part patent application (hereinafter referred to as the "Application") which is being filed herewith. The effective filing date for the claimed subject matter in the Application is 7 May 1999.

All claims in the Application have been copied directly from United States Patent No. 6,481,453, O'Connor et al., issued 19 November 2002 ("the '453 patent"). The earliest possible effective filing date of the '453 patent is 14 April 2000 (however, Applicants do not assert that this, or any other, priority filing date supports the subject matter of the interfering claims of the '453 patent). The '453 patent is directed to microfluidic devices capable of metering discrete volumes of fluid.

Applicants have directly copied Claims 33-39, 44-47 and 49 of the '453 patent into the Application. Claims 1-7 of the Application correspond identically with Claims 33-39 of the '453 patent; Claims 8-11 of the Application correspond identically with Claims 44-47 of the '453 patent; and Claim 12 of the Application is identical to Claim 49 of the '453 patent.

**Support for the Claims Presented**

This is a continuation-in-part application of U.S. Patent Application Serial Number 10/621,868, filed July 17, 2003, which is a continuation of U.S. Patent Application Serial Number 09/811,741, filed March 19, 2001; and is a continuation-in-part of U.S. Patent Application Serial Number 09/674,457, filed January 5, 2001, which claims priority to PCT Application Number PCT/IB99/00907, international filing date May 7, 1999.

Support for the copied claims may be found in all priority applications. For example, the earliest priority application, PCT Application Number PCT/IB99/00907, international filing date 7 May 1999, fully supports all of the copied claims. This is shown in the following claim chart which shows support for the copied claims both in the Application and in PCT Application Number PCT/IB99/00907 (reference in the chart to the PCT Application is made in parentheses).

The '453 Patent	Application
<p>Claim 33. A device for metering a microfluidic plug of fluid from a larger fluidic volume, the device comprising:</p> <p>a trunk channel having a fluidic inlet and a fluidic outlet; and</p> <p>a microfluidic branch channel in direct, independent fluid communication with the trunk channel, the branch channel having a fluidic impedance region;</p>	<p>See Figure 8.</p> <p>See Figure 8, items annular channels 24 and 25 are trunk channels; outlets 26 and 29 (Paragraphs 0102 and 0105 (PCT: page 11, lines 25-26, and lines 28-29; and page 12, line 26)) showing introduction of liquid; hence inlet is inherent.</p> <p>See Figure 8, items 27 and unnumbered channel; impedance regions are Z2 (A) and B. Paragraphs 0102 and 0104 (PCT: page 11, lines 26-28; page 12, lines 3-5, and lines 14-18).</p>

wherein the trunk channel, branch channel, fluidic inlet, fluidic outlet, and fluidic impedance are arranged to permit a first fluid to be supplied through the trunk channel to fill the branch channel to the fluidic impedance region, and thereafter to permit the fluidic contents of the trunk channel to be flushed through the fluidic outlet while the branch channel remains substantially filled.	See, e.g., Figure 8, items 25, B, Y2, 29 and unnumbered radial channel; as explained in Paragraphs 0104-0105 (PCT: page 12, lines 14-page 13, line 8) an aqueous solution is introduced into annular channel 25 and fills unnumbered radial channels until it reaches hydrophobic impedance region B, and flows from channel 25 into channel 29 until it reaches impedance region Y2, the CD is then spun at a first speed which allows liquid to flow past Y2 but not B. Thus, flushing channel 25 via channel 29, leaving the unnumbered channel full; from the description of the relative strengths of the impedance regions (see Paragraph 0102 (PCT: page 12, lines 4-8)) and Figure 8, items 24, 26, 27, Y and Z2 (A), it is clear that the same features apply to fill channel 27 with a defined volume via flushing.
34. The device of claim 33, further comprising a plurality of sub-branch channels in fluid communication with the microfluidic branch channel.	See Figure 8, unnumbered radial channels off annular channel 25 may act as sub-branch channels off branch channel 27 which are in fluid communication with trunk channel 24; See also Figure 8, sub-branches 30, 31, and 29; paragraph 0102 (PCT: page 12, lines 3-5)
35. The device of claim 33, further comprising a plurality of microfluidic branch channels, each in direct, independent fluid communication with the trunk channel.	See Figure 8 which shows that annular channel 25 is in direct, fluid communication with multiple unnumbered radial channels.
36. The device of claim 33 wherein the microfluidic branch channel has a volume of less than about two microliters.	Channel volume is inherent because the sample size is small. Paragraph 0008 (PCT: page 1, lines 16-17). Sample volumes less than 1 $\mu$ l (Paragraph 0100 (PCT: page 11, line 15)), less than 500 nl, between 1 and 10 nl. Paragraph 0100 (PCT: page 11, line 18).
37. The device of claim 33 wherein the microfluidic branch channel has a volume of less than about one microliter.	Channel volume is inherent because the sample size is small. Paragraph 0008 (PCT: page 1, lines 16-17). Sample volumes less than 1 $\mu$ l (Paragraph 0100 (PCT: page 11, line 15)), less than 500 nl, between 1 and 10 nl. Paragraph 0100 (PCT: page 11, line 18).
38. The device of claim 33 wherein the microfluidic branch channel has a volume of less than about five hundred nanoliters.	Channel volume is inherent because the sample size is small. Paragraph 0008 (PCT: page 1, lines 16-17). Sample

	volumes less than 500 nl, preferably 1 and 10 nl, e.g., 44 pl. Paragraph 0100 (PCT: page 11, line 18).
39. The device of claim 33 wherein the fluidic impedance region comprises a passive valve.	Impedance regions are discussed in Paragraph 0106 (PCT: page 13, lines 6-8); passive valving is an inherent function. See also hydrophobic breaks or valves. Paragraphs 0102, 0104, 0036 and 0039 (PCT: page 12, lines 5, 16, page 3, lines 8-9, page 4, lines 14-22).
44. The device of claim 33 wherein the branch channel has an associated gas-permeable vent.	See Figure 8, item 32 (not labeled), described in Paragraph 0103 (PCT: page 12, lines 7-12).
45. The device of claim 33 wherein the trunk channel is a microfluidic channel.	See Figure 8, items annular channels 25, 24; taught from sample volumes.
46. The device of claim 33, further comprising multiple microfluidic branch channels each in independent, direct fluid communication with the trunk channel.	See Figure 8 which shows that annular channel 25 is in direct, fluid communication with multiple unnumbered radial channels.
47. The device of claim 33 wherein the device is fabricated with a plurality of device layers.	Paragraph 0034 (PCT: Page 2, lines 22-25) showing two substrates.
49. The device of claim 33 wherein any device layer of the plurality of device layers is fabricated with a polymeric material.	See paragraph 0033 (PCT: Page 2, lines 15-17).

Accordingly, there is clearly support for the entire scope of copied claims in the Application and in its earliest priority document, effective filing date 7 May 1999. A request for declaration of interference under 37 C.F.R. §1.607 follows below.

**REQUEST FOR DECLARATION OF INTERFERENCE**

Pursuant to the provisions of 37 C.F.R. §1.607, applicants comply with the separate requirements of subsection (a) as indicated below.

1. Applicants request declaration of an interference between the above-captioned Application and U.S. Patent No. 6,481,453, O'Connor et al., issued 19 November 2002.

2. As a proposed count, Applicants identify Claim 1 of the Application, which is identical to Claim 33 of the '453 patent.

3. Claims 2-12 of the application, which are identical to Claims 34-39, 44-47 and 49 of the '453 patent, correspond with the proposed count and do not patentably distinguish over the proposed count.

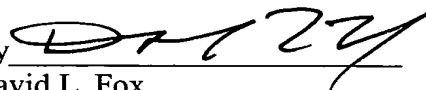
4. The terms of Claims 1-12 of the Application are applied to the disclosure of the Application as shown above, in Remarks.

5. Inquiry into the requirements of 35 U.S.C. §135(b) is not required herein because the claims were first presented within one year of the issue date of the '453 patent.

Applicant believes that no fee is due with this filing. However, if a fee is due, please charge our Deposit Account No. 06-2375, under Order No. 10314005 from which the undersigned is authorized to draw.

Dated: November 18, 2003

Respectfully submitted,

By 

David L. Fox

Registration No.: 40,612

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